Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Currently amended) An apparatus for controlling the temperature of a reaction mixture, the apparatus comprising:

a) a reaction vessel having a chamber for holding the mixture, the vessel comprising:

i) a rigid frame defining side walls of the chamber, wherein the frame further includes a port and a channel connecting the port to the chamber; and

ii) at least one flexible sheet attached to the rigid frame to form a major wall of the chamber;

b) at least one thermal surface for contacting the major wall;

c) an automated machine, comprising a pick-and-place machine for inserting a plunger into the channel to compress gas in the vessel, thereby ~~for~~ increasing the pressure in the chamber, wherein the pressure increase in the chamber is sufficient to force the major wall to conform to the thermal surface; and

d) at least one thermal element for heating or cooling the surface to induce a temperature change within the chamber.

2. (Original) The apparatus of claim 1, wherein the vessel includes first and second flexible sheets attached to opposite sides of the rigid frame to form opposing major walls of the chamber, the apparatus includes first and second thermal surfaces formed by opposing plates positioned to receive the chamber between them, and the pressure increase in the chamber is sufficient to force the major walls to contact and conform to the inner surfaces of the plates.

3. (Original) The apparatus of claim 2, wherein each of the plates comprises a ceramic material, and wherein each of the plates has a thickness less than or equal to 1 mm.

4. (Original) The apparatus of claim 2, wherein each of the plates has a resistive heating element coupled thereto.

5. (Original) The apparatus of claim 4, wherein the heating element comprises a film.

6. (Original) The apparatus of claim 2, wherein each of the plates has a thermal mass less than 5 J/°C.

7. (Original) The apparatus of claim 2, wherein each of the plates has a thermal mass less than 3 J/°C.

8. (Original) The apparatus of claim 2, wherein each of the plates has a thermal mass less than 1 J/°C.

9. (Original) The apparatus of claim 2, further comprising a support structure for holding the plates in an opposing relationship to each other, the support structure comprising:

a) a mounting plate having a slot therein;

b) spacing posts extending from the mounting plate on opposite sides of the slot, wherein each of the spacing posts has indentations formed on opposite sides thereof for receiving the edges of the plates; and

c) retention clips for holding the edges of the plates in the indentations.

10. (Canceled).

11. (Currently amended) The apparatus of claim 1~~10~~, wherein the frame includes an inner surface defining the channel, and wherein the inner surface has at least one pressure control groove formed therein, the pressure control groove extending to a predetermined depth in the channel to allow gas to escape from the vessel until the plunger reaches the predetermined depth.

12. (Currently amended) The apparatus of claim 1~~0~~, wherein the plunger has a pressure stroke sufficient to increase the pressure in the chamber to at least 2 psi above the ambient pressure external to the vessel.

13. (Original) The apparatus of claim 1, wherein the automated machine comprises:

a) a machine head having an axial bore for communicating with the channel of the vessel; and

b) a pressure source for pressurizing the chamber through the bore in the machine head.

14. (Original) The apparatus of claim 13, further comprising an adapter for placing the bore in fluid communication with the channel, wherein the adapter is sized to be inserted into the channel such that the adapter establishes a seal with the walls of the channel.

15. (Original) The apparatus of claim 14, wherein the adapter includes a valve for preventing fluid from escaping from the vessel.

16. (Original) The apparatus of claim 1, further comprising an elastomeric plug inserted into the channel, wherein the automated machine comprises:

a) means for inserting a needle through the plug; and

b) a pressure source for injecting fluid into the vessel through the needle.

17. (Original) The apparatus of claim 16, wherein the needle includes a first bore for dispensing the fluid into the vessel and a second bore for venting gas from the vessel, and wherein the first bore has a length greater than the second bore.

18. (Original) The apparatus of claim 1, wherein the automated machine comprises a platen for heat sealing a film or foil to the vessel to seal the port and reduce the volume of the channel.

19. (Original) The apparatus of claim 1, wherein:

a) at least two of the side walls of the chamber are optically transmissive and angularly offset from each other;

b) the apparatus further comprises an optics system having at least one light source for exciting the mixture through a first one of the optically transmissive side walls and having at least one detector for detecting light emitted from the chamber through a second one of the optically transmissive side walls.

20. (Original) The apparatus of claim 19, wherein:

a) the apparatus includes first and second thermal surfaces formed by opposing plates positioned to receive the chamber of the vessel between them; and

b) each of the plates has first and second edges angularly offset from each other by substantially the same angle that the optically transmissive side walls are offset from each other, and the plates are positioned to receive the chamber between them such that the first optically transmissive side wall is positioned substantially adjacent and parallel to the first bottom edge of each plate and such that the second optically transmissive side wall is positioned substantially adjacent and parallel to the second bottom edge of each plate.

21. (Original) The apparatus of claim 19, wherein the optically transmissive side walls are angularly offset from each other by about 90°.

22. (Original) The apparatus of claim 19, wherein at least two additional side walls of the chamber have retro-reflective faces.

23. (Original) The apparatus of claim 19, wherein the ratio of the width the chamber to the thickness of the chamber is at least 4:1, and wherein the chamber has a thickness in the range of 0.5 to 2 mm.

24. (Original) The apparatus of claim 19, wherein the plates, thermal element, and optics system are incorporated into a heat-exchanging module, the apparatus further comprises a base instrument for receiving the heat-exchanging module, and the base instrument includes processing electronics for controlling the operation of the module.

25. (Original) The apparatus of claim 24, wherein the heat-exchanging module further comprises a housing and a cooling element disposed within the housing for cooling the reaction mixture contained in the chamber.

26. (Original) The apparatus of claim 24, wherein the base instrument is constructed to receive and control a plurality of such heat-exchanging modules.

27. (Original) The apparatus of claim 26, further comprising at least one computer for controlling the base instrument.

28. (Currently amended) An apparatus for controlling the temperature of a reaction mixture ~~contained in a reaction vessel, wherein the vessel includes a reaction chamber and at least one port for adding fluid to the chamber, and wherein the chamber has at least one flexible wall~~, the apparatus comprising:

a) a reaction vessel having a reaction chamber and at least one port for adding fluid to the chamber, and wherein the chamber has at least one flexible wall;

~~a~~b) a thermal surface for contacting the flexible wall;

~~b~~c) an automated machine for increasing the pressure in the chamber, comprising

i) a machine head having a bore for communicating with the vessel; and

ii) a pressure source for pressuring the chamber through the machine head,

wherein the pressure increase in the chamber is sufficient to force the flexible wall to contact and conform to the thermal surface; and

~~c~~d) at least one thermal element for heating or cooling the thermal surface to induce a temperature change within the chamber.

29. (Currently amended) The apparatus of claim 28, wherein the vessel further comprises a first and a second major flexible wall, and wherein the apparatus includes first and second thermal surfaces formed by opposing plates positioned to receive the chamber of the vessel between them, and wherein each of the plates has a heating element coupled thereto.

30. (Previously presented) The apparatus of claim 29, wherein each of the plates has a thermal mass less than 5 J/°C.

31. (Previously presented) The apparatus of claim 29, wherein each of the plates has a thermal mass less than 1 J/°C.

32. (Previously presented) The apparatus of claim 28, wherein the vessel includes a channel connecting the port to the chamber, and wherein the automated machine comprises a pick-and-place machine for inserting a plunger into the channel to compress gas in the vessel.

33. (Canceled).

34. (Currently amended) The apparatus of claim 28 ~~33~~, further comprising an adapter for placing the machine head in fluid communication with the vessel, wherein the vessel includes a channel connecting the port to the chamber, and wherein the adapter is sized to be inserted into the channel such that the adapter establishes a seal with the walls of the channel.

35. (Currently amended) The apparatus of claim 28 ~~33~~, further comprising an adapter for placing the machine head in fluid communication with the vessel, wherein the adapter includes a valve for preventing fluid from escaping from the vessel.

36. (Currently amended) The apparatus of claim 28, wherein the automated machine further comprises~~:~~

~~a) a machine head for communicating with the vessel; and~~

~~b)~~ means for dispensing fluid into the vessel through the machine head.

37. (Currently amended) The apparatus of claim 28, ~~wherein the vessel includes a channel connecting the port to the chamber, the apparatus further includes an elastomeric plug inserted into the channel, and the automated machine comprises:~~
wherein the vessel further comprises:

a) a channel connecting the port to the chamber;

b) an elastomeric plug inserted into the channel; and

wherein the automated machine further comprises:

a) a needle for inserting through the plug;

~~a~~b) means for inserting ~~a~~ the needle through the plug; and

~~b~~c) means for injecting fluid into the vessel through the needle.

38. (Previously presented) The apparatus of claim 37, wherein the needle includes a first bore for dispensing the fluid into the vessel and a second bore for venting gas from the vessel, and wherein the first bore has a length greater than the second bore.

39. (Previously presented) The apparatus of claim 28, wherein the automated machine comprises a platen for heat sealing a film or foil to the vessel to seal the port.

40. (Previously presented) The apparatus of claim 28, further comprising an optics system for optically interrogating the mixture contained in the chamber through first and second optically transmissive walls of the vessel, the optics system having at least one light source for exciting the mixture through the first wall and having at least one detector for detecting light emitted from the chamber through the second wall.

41. (Previously presented) The apparatus of claim 40, wherein the plates, heating elements, and optics system are incorporated into a heat-exchanging module, the apparatus further comprises a base instrument for receiving the heat-exchanging module, and the base instrument includes processing electronics for controlling the operation of the module.

42 (New) The apparatus of claim 29, wherein each of the plates comprises a ceramic material, and wherein each of the plates has a thickness less than or equal to 1 mm.

43 (New) The apparatus of claim 29, wherein the heating element comprises a film.

44 (New) The apparatus of claim 29, further comprising a support structure for holding the plates in an opposing relationship to each other, the support structure comprising:

a) a mounting plate having a slot therein;

b) spacing posts extending from the mounting plate on opposite sides of the slot, wherein each of the spacing posts has indentations formed on opposite sides thereof for receiving the edges of the plates; and

c) retention clips for holding the edges of the plates in the indentations.

45 (New) The apparatus of claim 32, wherein an inner surface of the channel has at least one pressure control groove formed therein, the pressure control groove extending to a predetermined depth in the channel to allow gas to escape from the vessel until the plunger reaches the predetermined depth.

46 (New) The apparatus of claim 45, wherein the plunger has a pressure stroke sufficient to increase the pressure in the chamber to at least 2 psi above the ambient pressure external to the vessel.

47 (New) The apparatus of claim 28, wherein a rigid frame defines side walls of the chamber, and wherein:

a) at least two of the side walls of the chamber are optically transmissive and angularly offset from each other;

b) the apparatus further comprises an optics system having at least one light source for exciting the mixture through a first one of the optically transmissive side walls and having at least one detector for detecting light emitted from the chamber through a second one of the optically transmissive side walls.

48 (New) The apparatus of claim 47, wherein:

a) the apparatus includes first and second thermal surfaces formed by opposing plates positioned to receive the chamber of the vessel between them; and

b) each of the plates has first and second edges angularly offset from each other by substantially the same angle that the optically transmissive side walls are offset from each other, and the plates are positioned to receive the chamber between them such that the first optically transmissive side wall is positioned substantially adjacent and parallel to the first

bottom edge of each plate and such that the second optically transmissive side wall is positioned substantially adjacent and parallel to the second bottom edge of each plate.

49 (New) The apparatus of claim 47, wherein the optically transmissive side walls are angularly offset from each other by about 90°.

50 (New) The apparatus of claim 47, wherein at least two additional side walls of the chamber have retro-reflective faces.

51 (New) The apparatus of claim 47, wherein the ratio of the width of the chamber to the thickness of the chamber is at least 4:1, and wherein the chamber has a thickness in the range of 0.5 to 2.0 mm.

52 (New) The apparatus of claim 41, wherein the heat-exchanging module further comprises a housing and a cooling element disposed within the housing for cooling the reaction mixture contained in the chamber.

53 (New) The apparatus of claim 41, wherein the base instrument is constructed to receive and control a plurality of such heat-exchanging modules.

54 (New) The apparatus of claim 53, further comprising at least one computer for controlling the base instrument.